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Spermophilus madrensis.

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Spermophilus madrensis (Merriam, 1901)

Sierra Madre Mantled Ground Squirrel

Callospermophilus madrensis Merriam, 1901:563. Type locality "Sierra Madre, near Guadalupe y Calvo, Chihuahua, Mexico (altitude 7,000 feet)."

Spermophilus madrensis: Hall and Kelson, 1959:363. First use of current name combination.

CONTEXT AND CONTENT. Order Rodentia, Suborder Sciuromorpha, Family Sciuridae, Subfamily Sciurinae, Tribe Marmotini, Subtribe Spermophilina (Hafner, 1984; Hall, 1981). The genus *Spermophilus* contains about 36 species (Honacki et al., 1982). *S. madrensis* is monotypic (Hall, 1981).

DIAGNOSIS. *Spermophilus madrensis* closely resembles *S. lateralis*. *S. madrensis* is smaller, the tail is shorter, the colors are much duller with scarcely a trace of mantle, the black stripes are shorter and poorly defined (tending to become obsolete), and the white stripes reach nearly to the base of the tail. The skull of *S. madrensis* (Fig. 1) is narrower, the braincase is more highly arched (Hall, 1981), and the zygomata are more appressed than in *S. lateralis* (Howell, 1938).

GENERAL CHARACTERS. Average and range of external measurements (in mm) are: total length, 233 (215–253); length of tail, 61 (40–82); length of hind foot, 38.1 (31–42); length of ear, 21.5 (18–28). Cranial measurements (in mm) are: occipitonasal length, 41.7 (40.6–42.5); zygomatic breadth, 25.0 (24.5–25.5); breadth of braincase, 17.9 (17.5–18.3); interorbital breadth, 9.4 (8.9–10.2); postorbital breadth, 12.0 (11.1–13.1); length of maxillary toothrow, 8.5 (8.1–9.1); dental span, 11.1 (10.7–11.7; Anderson, 1972); length of nasals, 15.8 (15.1–17.0); palatilar length, 20.1 (19.5–20.5; Howell, 1938). Average mass is 156 g (range, 109–198; Anderson, 1972).

DISTRIBUTION. The distribution of *S. madrensis* is restricted to the states of Chihuahua and Durango in northwestern Mexico (Hall, 1981; Fig. 2). Though no specimens are known from Durango, they have been observed from above Guanaceví, Durango, to Guadalupe y Calvo, Chihuahua (Baker and Greer, 1962). This species also may occur in Sinaloa (Hall, 1981) and Sonora (Caire, 1978). Altitudinal range is from about 3,000 to 3,750 m (Webb and Baker, 1984). No fossils are known.

FORM AND FUNCTION. There is a medium to large masserteric tubercle located ventral and lateral to the oval or subtriangular intraorbital foramen. The cranium is inflated (Caire, 1978).

In worn summer pelage (26 August–3 September), the head and face are hazel or sayal brown. The eye ring is buffy white and the lower cheeks, sides of lips, and forelegs are warm buff. The sides of the neck and shoulders are rather faintly washed with cinnamon buff and ochraceous tawny. The ears are thinly clothed on the outer surface with cinnamon hairs. The general tone of the upper parts is cinnamon drab or fawn color, darkest and purest on the rump and thighs. The pale dorsal stripes are dull whitish or pinkish buff. The dark stripes are blackish, often very faintly indicated. The sides of the body are cinnamon buff or buffy white. The tail above is fuscous black, mixed with warm buff; the tail beneath is warm buff, tipped with blackish. The hind feet are pinkish buff and the underparts are pinkish buff or buffy white (Howell, 1938).

ONTOGENY AND REPRODUCTION. On 24 May, one female had five embryos (Webb and Baker, 1984), and in early June, four females contained two, four, five, and five embryos each. In July, seven females were lactating (Anderson, 1972).

ECOLOGY. *Spermophilus madrensis* occurs in pine forests at elevations higher than the pinyon-pine belt (Baker and Greer, 1962; Howell, 1938). At higher elevations (about 3,750 m), it occurs where slopes are covered by *Pseudotsuga*, *Pinus*, *Juniperus*, and *Populus*, with no *Quercus* (Webb and Baker, 1984). The range is in the Sierra Madre Occidental Biotic Province, which occupies the Sierra Madre Occidental along the continental backbone in north-

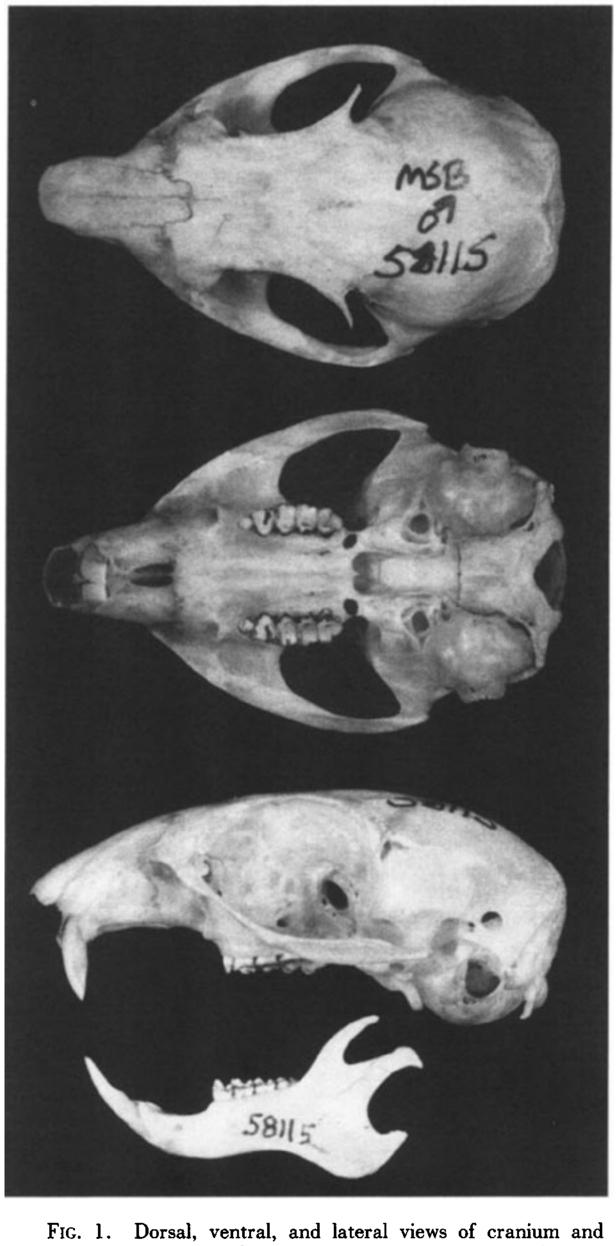


FIG. 1. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Spermophilus madrensis* (male, Museum of Southwestern Biology 58115, from near San Juanito, Chihuahua, Mexico). Greatest length of cranium is 42.8 mm. Photographs by T. L. Best and J. L. Dobie.

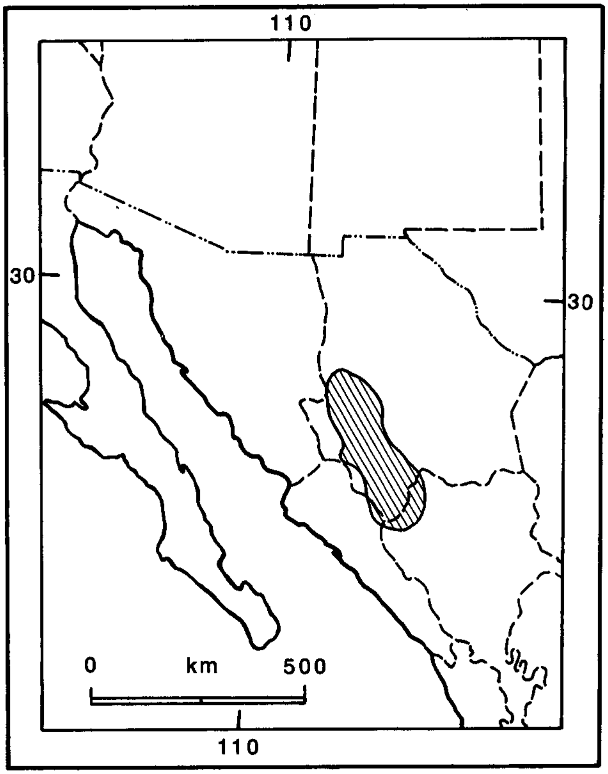


FIG. 2. Distribution of *Spermophilus madrensis* in northwestern Mexico (Hall, 1981).

western Mexico. Generally, the area is a rolling plateau at 2,100–2,400 m altitude, with the western side cut by canyons draining to the Pacific Coast. Some peaks rise from 300 to 1,050 m above the general level. The higher part lies chiefly in the Transition Zone where the climate is rather dry, although heavy rains are frequent during the summer and some snow falls on the upper slopes in winter and as late as May. The upper slopes of the mountains are covered mainly with forests of pine (*Pinus*), oak (*Quercus*), and madroño (*Arbutus texana*), with the "pinabete" (*Abies religiosa*), Douglas fir (*Psuedotsuga mucronata*), and quaking aspen (*Populus tremuloides*) appearing here and there in the colder places as Canadian Zone elements. At somewhat lower levels in the Upper Austral Zone, oaks and many shrubs, including the manzanita (*Arctostaphylos pungens*), become dominant. Other mammals in this area include *Ursus americanus, Canis lupus, Felis concolor, Sciurus aberti, Odocoileus virginianus* (Goldman and Moore, 1946), *Tamias bulleri, Peromyscus melanotis, Sorex monticolus, Thomomys umbrinus*, and *Microtus mexicanus*. Also, there are flocks of the endangered thick-billed parrot (*Rhynchopsitta pachyrhyncha*) and several species of reptiles and amphibians (*Hyla eximia, Ambystoma rosaceum, Bufo microscaphus, Rana pipiens, Sceloporus jarrovii*, and *S. grammicus*; Webb and Baker, 1984). Other than being observed on bulldozed, roadside rockpiles (Webb and Baker, 1984), nothing is known about the behavior or genetics of *S. madrensis*.

REMARKS. *Spermophilus* means seed-loving and is derived from the Greek *spermatos* for seed and *phileo* for love (Jaeger, 1955). The specific epithet *madrensis* refers to the Sierra Madre Occidental of Mexico.

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